Small-pox

IN

London

BY

JOHN F. J. SYKES, M.D.,

Medical Officer of Health, St Pancras.

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Small-pox in London.

A brief Description of the Beginnings of the Present Outbreak, with Suggestions as to Executive and Administrative Measures.

A PAPER,

Illustrated by a Series of Spotted Maps,

READ BEFORE THE

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH

BY

JOHN F. J. SYKES, M.D.,

D.Sc. (Edin.), Medical Officer of Health, St Pancras, &c.

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SMALL-POX IN LONDON.

A brief Description of the Beginnings of the present Outbreak, with Suggestions as to Executive and Administrative Measures.

SMALL-POX has never within knowledge been entirely eradicated from Great Britain as a whole, but there have been periods during which it has been reduced to very small proportions. In separate parts, counties, or towns, it has been eradicated and absent during varying periods of time.

A brief retrospect of the past origins and spread of small-pox in London since the commencement of the notification of infectious diseases at the end of 1889 will reveal some salient features.

During 1890, we learn from the Annual Reports of Metropolitan Asylums Board, of the 26 patients suffering from small-pox admitted to the hospital ships, 5 of the patients were infected before arrival in England, 1 each at Lisbon, Gijon (Spain), and Montreal, and 2 at Marseilles. (Dr R. A. Birdwood.)

During 1891, of 63 patients suffering from small-pox admitted to the ships, 3 were infected abroad. They came from Lisbon, Bilbao, and Valencia, and a large proportion of the epidemic occurred amongst dock officials and labourers, and their relatives. (Dr R. A. Birdwood.)

During 1892, the disease made its appearance amongst a colony of Swiss waiters. (Dr R. A. Birdwood.) The disease at the time was epidemic in the Canton of Ticino, in Italian Switzerland, of which some of the waiters were natives. It was also intro-

duced into London several times during this year, through persons in contact with tramps.

During 1893, the disease continued to prevail, reaching its maximum in April and May, spreading through infected vagrants in shelters, common lodging-houses, and casual wards. (Dr D. S. Long.)

During 1894, the epidemic of 1893 was abating, being principally spread by unrecognised cases. (Dr T. F. Ricketts.)

During 1895, there was a recrudescence, vagrants continuing to spread the disease through shelters and common lodging-houses. (Dr T. F. Ricketts.)

During 1896, scattered cases occurred in the Metropolis, but towards the end of the year the Small-pox Hospital was empty for a fortnight, until a native of India, a coal trimmer on board ship, was admitted on the 30th of December. (Dr T. F. Ricketts.)

During 1897, of 71 cases admitted, 47 were attributed to infection imported by the seaman admitted at the end of 1896; and later in the year another importation took place through sailors from an infected steamer from East Africa. (Dr T. B. Brooke.) The infected sailors had some bearing on the outbreak in Greenwich Hospital. From the 14th of August to the end of the year, four and a half months, the Small-pox Hospital was empty. (Dr T. F. Ricketts.)

During 1898, small-pox was introduced from Middlesbrough, and also by an itinerant Polish Jew. There were only 5 cases during the year, and the Metropolis was free from small-pox during the last thirteen weeks of the year. (Dr T. F. Ricketts.)

During 1899, of 11 patients admitted, 1 got small-pox in Antwerp, another at New York, a third on the voyage from South Africa, a fourth in Paris, another patient was infected at a port in the north of England, and two from a man resident in Essex, who had contracted small-pox in Egypt. (Dr T. F. Ricketts.)

During 1900, 67 patients were treated at the Small-

pox Hospital. Six of the patients had recently arrived in London from abroad, two from the provinces, and two from training ships, and these cases spread the disease to others. (Dr T. F. Ricketts.)

In 1901, in January, a patient developed the disease in London on arriving from Paris; in February a steward from an infected ship developed the disease after arrival; in March and April no small-pox was notified in London; in May a traveller from Egypt developed the disease; in the second week of June a child of Russian Jews at the East End fell with the disease.

Coming now to the commencement of the present invasion, according to statistics published by the *British Medical Journal* on 28th September last, small-pox was prevalent in Paris throughout 1900 in increasing proportion, reaching its maximum towards the end of the year, when it subsided somewhat; and in the spring of this year recommenced to increase, reaching its highest point about the beginning of June.

The influx of travellers from the Continent increases considerably about this time of year, and in June and July a series of remarkable outbreaks occurred independently in different parts of the Metropolis. No person arriving from the Continent was actually notified as suffering from the disease, but there are strong grounds for believing that unrecognised cases were imported.

The remarkable series of outbreaks to which I refer as starting in June and July the epidemic in the Metropolis, are the following :—

1. Mr Wynter Blyth reported that at the commencement of June a young gentleman arrived at a large hotel in central London from Paris. He is said to have developed influenza and then chicken-pox, and was moved into Marylebone to be nursed. The nurse who had attended him sickened and rapidly died of a malignant form of small-pox.

2. In Wandsworth a person, at the beginning of June, suffered and died from an obscure illness. A visiting friend who returned to the provinces developed chicken-pox, a relative in the same house developed small-pox, the dirty linen was sent to a particular laundry, and at that laundry small-pox developed in a female sorter and a female fellow-worker.

3. In Hackney also, in June a male collector of dirty linen for a particular laundry fell ill with small-pox, a female fellow-worker, the daughter of the collector, the step-son of the collector, a sister of the step-son, another sister, a young male person living in the same house, and the brother of a young woman living next door to three of the young women attacked.

4. Dr Reginald Dudfield reported that a servant came from Limehouse, a district of docks, to a house in Paddington, stayed there a few days, and went away ill to Marylebone, where she developed small-pox, and was removed to hospital on the 9th July, having given the disease to the housekeeper at the house in Paddington, and to another woman who visited the house.

5. In St Pancras, after many inquiries and overcoming persistent reticence, I ultimately ascertained that a girl, seventeen years of age, a sorter of dirty linen at a laundry, receiving from hotels and boarding-houses in the W.C. District, fell ill at work on Tuesday, 16th July, went home and developed measles two or three days afterwards, and remained at home some three weeks. Her mother *knew* it was chicken-pox, and said a doctor who saw it confirmed her, nevertheless, about a fortnight afterwards, her two sisters were sent from a general hospital to the ships with small-pox. A child next door, that they were seen to fondle, developed chicken-pox, was nursed at home for a week, and died, and the members of this child's family, who are numerous, were recognised by the family name and their relationships, as being

sent one after the other to hospital suffering from small-pox. There were no less than six other members of this family so sent from other parts, in addition to seven other persons from the same house, and about twenty other persons from the same street.

The further course of the disease in London is shown upon the accompanying table.

The remarkable fact is that during the great prevalence in St Pancras no two patients were found to have received linen from the same laundry, an indication of the fact that laundries did not spread the imported disease to their customers ; on the contrary, the process of washing is evidently an effectual disinfectant process, since the sequence of cases comes to a stop at the laundries, and does not pass through with the linen. This is a credit to properly managed laundries in London, where ailing employees are not allowed to remain on duty and do not handle clean linen. But those who handle dirty linen, and especially the sorters, run great risk. This was brought home to me vividly in tracing out the first suspicious case, when I was suddenly confronted with the innocent young girl, weeks ago recovered, standing in the centre of a great circle of dirty linen in heaps, picking up each article, shaking it out, and spreading it to search for the mark whereby it might again be known when it emerged from the washtub. The sorters of dirty linen must excite our sympathy in the risks of infection that they run, and falling ill, carry to their families and acquaintances. The poor do not send their linen to be sorted or shaken out at laundries, it is from the more comfortable classes that the laundries derive their customers.

Thus it would appear that several of the sources of the disease introduced into London were *unrecognised cases* amongst persons from abroad staying at hotels and boarding houses, whose linen was sent to laundries where the infection was stopped from being distributed in direct descent to the customers, and was spread

1901.—DISTRIBUTION OF SMALL-POX CASES IN LONDON FOR THE WEEK ENDING

Borough in which the Cases were Resident.	Census Population 1901.	3rd Aug.	10th Aug.	17th Aug.	24th Aug.	31st Aug.	7th Sept.	14th Sept.	21st Sept.	28th Sept.	5th Oct.	12th Oct.	19th Oct.	26th Oct.	2nd Nov.	9th Nov.	16th Nov.
West—																	
Paddington -	143,954	...	...	...	...	...	1	1	...	...	...	...	...	1	...	1	...
Kensington -	176,623	...	...	...	...	...	...	4	...	...	1	...	...	...	1	...	...
Hammersmith -	112,245	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
Fulham - -	137,289	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chelsea - -	73,856	...	...	...	1	...	...	...	1	...	1	...	...	...	1	...	...
Westminster -	182,977	1	...	1	...	2	4	...	1	...	3	3	1	1	29	7	8
North—																	
Marylebone -	133,329	...	1	...	...	16	6	7	6	3	4	1	1	3	4	1	1
Hampstead -	81,942	...	...	1	...	...	1	...	1	...	...	...	...	...	1	...	...
St Pancras - -	235,284	...	3	1	16	29	10	24	10	8	8	1	10	7	11	5	14
Islington - -	334,928	...	...	...	...	3	...	5	4	1	4	4	2	2	7	1	4
Stoke Newington	51,247	...	...	...	1	1	1	3	...	1	...	...	...	1	...	...	1
Hackney - -	219,288	1	...	1	...	4	...	...	2	4	5	1	1	1	...	...	1
Central—																	
Holborn - -	59,390	...	...	1	2	2	4	5	2	3	3	1	3	2	38	15	10
Finsbury - -	101,476	...	...	1	...	1	...	...	2	10	7	5	3	3	3	15	3
City of London -	26,897	...	...	...	...	...	...	...	...	2	...	...	...	...	1	...	1
East—																	
Shoreditch - -	118,705	...	...	...	...	...	...	1	...	1	...	1	1	...	1	...	...
Bethnal Green -	129,681	...	...	...	1	...	...	1	...	1	1	...	...	4	2	3	1
Stepney - -	298,548	...	...	...	...	...	...	...	1	3	2	1	15	1	8	5	12
Poplar - -	168,838	...	...	...	...	...	...	...	...	2	2	3	4	1	7	...	3
South—																	
Southwark - -	206,128	...	...	1	1	...	...	...	4	...	..	2	...	2	5	4	1
Bermondsey -	130,486	...	...	...	...	...	...	...	...	...	...	...	3	16	39	2	19
Lambeth - -	301,873	...	...	...	...	1	...	1	1	1	1	4	2	2	5	...	6
Battersea - -	168,896	...	...	...	...	...	...	...	...	...	...	...	1	3	1	...	...
Wandsworth -	232,030	...	1	...	...	1	...	1	...	...	...	...	...	...	1	2	4
Camberwell -	259,258	...	...	...	...	...	...	...	...	...	...	...	1	...	5	3	11
Deptford - -	110,513	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Greenwich - -	95,757	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	1
Lewisham - -	127,460	...	...	...	...	...	...	...	1	...	1	1	...	3	...	...	...
Woolwich - -	117,165	...	...	...	...	...	...	...	...	1	1	...	...	...	1	...	2
Port of London -	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Totals - -	4,536,063	3	5	7	22	60	27	53	37	41	44	28	48	55	173	64	104

laterally to the sorters and other workers, and their families away from the laundries; and further, again through *unrecognised cases* * in these families spread amongst the public, even lower in the scale, until it has reached the casual class and vagrants.†

The conclusions appear to be—

1. That small-pox is an imported disease, imported (*a*) from abroad, and (*b*) from one town or part to another.

2. That small-pox is imported and spread from person to person, (*a*) by unrecognised cases, (*b*) by cases delayed in recognition, and (*c*) by incubating cases probably between falling ill and development of the rash.

3. That small-pox is carried by the dirty linen and clothing (*a*) of unrecognised cases, and (*b*) occasionally of recognised cases.

4. That small-pox is also carried by persons brought into contact with infected cases, probably by the clothing, and that these contacts may also incubate, develop and spread the disease, and so reiterate the cycle.

Preventive Measures.

As to importation from abroad, quarantine of ships and cordons round towns, with the object of isolating communities *en masse* have ceased in this country, and are impracticable where trade and intercourse are extensive and rapid. They have been displaced by isolation *in detail* of sick persons, and in the first line of defence are Medical Officers of Ports. But large numbers of travellers arrive in this country by the ferry boats from

* Other cases were found to have been treated as chicken-pox, and others delayed in recognition.

† One means of checking the spread amongst the casual and vagrant class should be to make a medical examination every evening of the persons admitted to casual wards, and every night or very early morning of the persons admitted to common lodging-houses and shelters.

the Continent, who pass through without question, whose journeys occupy but a few hours, and some of whom may be incubating the disease, which takes from twelve to fourteen days to develop. It is difficult to devise, and would be still more difficult to carry out, measures to secure these infected persons on their journeys. After arrival, when the disease develops, most of them are recognised as suffering and isolated, but some are so mildly affected as to escape recognition, either temporarily or entirely.

As to importation from one town or part to another, it is equally difficult, in the face of continuous and rapid intercommunication, for an uninfected town or part, to protect itself against unseen and unknown invasion. But warnings may be given of any known movements of infected or suspected persons, or of persons brought into contact with infected persons. As a matter of fact this is the method adopted in this country by Medical Officers of Health, by whom after inquiry in each case any discovered movements are immediately communicated direct to the Medical Officers of Health into whose districts the movements may take place.

If the Local Government Board and Port and County Medical Officers could devise a similar method of international warnings of suspects and contacts, I believe their efforts would be rewarded with practical results. Small-pox is a disease that on account of its long incubation period is eminently fitted for the first trial of international notification and warning.

Persons incubating small-pox may introduce the disease from places within a fortnight's journey of this island of Great Britain. The area accessible within a fortnight's journey is immense, and embraces a large portion of the civilised world, in some parts of which small-pox is always present.

International notification could commence with greater probability of success with small-pox than with

any other infectious disease. Firstly, because of the long incubation period; secondly, because it would not interfere with maritime commerce, inasmuch as fixed maritime quarantine measures on the Continent are only applied permanently to plague, cholera, and yellow fever; and, thirdly, because there is an alternative in efficient vaccination and re-vaccination.

The first point for consideration is the international notification of small-pox.

As to discovery and diagnosis, in the absence of any knowledge or of only partial knowledge of the introduction of the disease, and in the presence of the fact that when introduced it is often overlooked, the early discovery of cases is of the greatest importance.

Before the disease is definitely diagnosed, a patient passes through two series of opinions, the one lay, and the other medical.

Persons having the disease very mildly are extremely dangerous in spreading the disease widely. There are three types of such mild cases—firstly, the person who has only a few pains and pimples and takes no notice of them; secondly, the person who is certain of having chicken-pox only; and thirdly, the person who declines to obtain a medical opinion on account of the fear of expense, or the dread of having to stop earning, or the dislike of going to hospital. The last is almost confined to foreigners and to outcasts, until they have experienced the kind treatment they receive in hospital.

Through the press or by notices the public may be exhorted to seek medical opinion as to their rashes and ailments, however slight, not only for their own sakes, but also for the protection of their families and households. Gratuitous medical advice is provided by means of the Poor Law Medical Officers for the destitute, for the necessitous the charitable public have provided hospitals, and for those who can only afford a small fee there are numerous dispensaries. There-

fore, there can be no legitimate reason for not seeking medical advice.

The question presents itself, whether persons with eruptions, in times of small-pox prevalence, who wilfully avoid medical opinion and are found to be suffering from small-pox, and exposing themselves so as to spread the disease, are not almost as culpable as persons who expose themselves wilfully after having been informed that they are suffering from the disease; and whether they should not be liable to some proportionate punishment.

Vaccination officers and their assistants, when notified of small-pox cases, are instructed to visit from room to room, dwelling to dwelling, and house to house, and they should also be instructed, when meeting with any suspicious rash or illness, to advise that medical opinion be sought, or in the case of the necessitous, to report to the Relieving Officer, District Medical Officer, or Public Vaccinator.

The second point for consideration is extension of the instructions to be given to vaccination officials, as to suspicious rashes and ailments observed by them in the course of their duties.

As to diagnosis, errors in small-pox have been common. First groups of cases in recent years have often been traced to small-pox, treated at home as chicken-pox, and it must be admitted that in mild and modified cases such errors are likely to occur. The converse is also noticeable, within the last ten years, about one-half of the cases not small-pox sent to the Metropolitan Asylums Board Hospital has been chicken-pox, the other half has been distributed amongst a considerable number of diseases, amongst which syphilis appears fairly frequently. Therefore, chicken-pox is a disease as to which we have to be particularly on guard.

The third point for consideration is the making of chicken-pox a notifiable infectious disease.

The St Pancras Borough Council has made chicken-pox a compulsorily notifiable disease for a period of six months, the Local Government Board has approved, and several other Borough Councils have taken a similar course.

During the first four weeks that the order has been in force, fifty cases of chicken-pox have been notified, and one was promptly discovered to be a case of small-pox. The notification has evidently led to greater circumspection, and to confirmation by a second medical opinion. Chicken-pox is essentially a disease of children, and in efficiently vaccinated children under ten years of age we used not to expect to meet with small-pox, but the amount of inefficient vaccination has altered our expectations, and misled many practitioners. If only as an aid to diagnosis between chicken-pox and small-pox, the value of thorough and efficient vaccination demonstrates itself, just as partial and insufficient vaccination proclaims itself misleading and therefore dangerous. Unfortunately it is by the latter only that the value of vaccination is judged by its opponents.

The fourth point, and one to be insisted upon, is that the law should require that in every case of vaccination the operation should be thorough and efficient, and that a description of the result obtained should form part of the certificate.

In this manner, those who seek the protection of vaccination would be reassured by more certain safety, and those who do not would realise more distinctly their danger and responsibility.

Passing now to the question of diagnosis in its administrative aspect. It is obviously the duty of medical practitioners to diagnose their cases, or in difficulty to recommend that a second opinion be obtained. The kind of second opinion depends upon the patient's circumstances: if destitute, the case is referred to the Relieving Officer and District Medical Officer; if poor, the patient is often advised to go to a general or

special hospital, but if unable to leave the sick-room this course cannot be adopted; if of competent means a medical colleague is generally called in as consultant, and if well to do an expert consultant is applied to. It is amongst poor patients of incompetent means and unable to leave the sick-room that the great difficulty of obtaining a second opinion presents itself to medical practitioners.

The duty of a Medical Superintendent of an infectious hospital is to diagnose a case before admission. As the hospital is usually at a distance and the patient may be near, it is often found more convenient in provincial towns for the Medical Superintendent to diagnose the case at home. The Medical Superintendent may also happen to be the Medical Officer of Health, and this is where a confusion of ideas as to spheres of responsibility has taken place. A Medical Officer of Health when asked, has been known to say to two medical men who differ, I shall be happy to diagnose provided you accept my decision; but in expressing an opinion in response to one medical attendant alone he would prejudice the case of the other if subsequently called in again, and would then find himself in a false position.

The duty of a medical attendant, of a consultant, of a Medical Superintendent of an infectious hospital, and of a Medical Officer of Health, personally towards a patient, is perfectly clear and distinct.

The long journeys and the great expense that would be incurred in sending with the ambulances a number of medical men for the purpose of confirming the diagnosis before removing small-pox cases to the wharf for admission to hospital, has, no doubt, deterred the Metropolitan Asylums Board from taking such action in London as might be taken with greater facility in a small town. In the largest towns and boroughs it would be physically impossible for the Medical Officer of Health to act compulsorily as

consultant at call in infectious cases to hundreds of medical practitioners, even if it were desirable. Wherever there is possibility of danger to the public, there the Medical Officer of Health, whilst displaying every courtesy to the medical profession, must make such inquiries as circumstances require for the public protection, but he must retain his freedom of action and judgment.

On the other hand, to facilitate the statutory notification of infectious diseases, most authorities have adopted bacteriological examination in cases of suspected diphtheria and typhoid fever. Bacteriological examination is not available in suspected small-pox, chicken-pox, or allied symptoms, and only clinical examination is available to assist diagnosis. The St Pancras Borough Council has, with this view, appointed a Medical Referee in each ward as clinical examiner for those patients who cannot afford the expense of a consultant, and to encourage medical practitioners to obtain a second opinion in doubtful cases.

The fifth point I would direct your attention to is the provision of clinical examination in doubtful cases where bacteriological examination is not available as an aid to diagnosis for the purpose of notification.

As to procedure after notification, the following is the usual routine. Upon the receipt of a notification certificate as to small-pox, if the patient has not already been removed, a telephonic or telegraphic message is immediately sent for the ambulance, a copy of the certificate is sent by messenger to the house for the ambulance nurse, and the Sanitary Inspector informed of the case by a copy of the certificate upon his report form, and the disinfectors despatched to the house. The ambulance removes the patient, the disinfectors serve the disinfection and other notices, remove the bedding and clothing, and seal up and fumigate the infected rooms. The Sanitary Inspector sees that this is properly done, makes inquiry into the circumstances

of the case, and later on, when the rooms are reopened, sends the men to strip and cleanse the surfaces. Meanwhile the clerk enters the case in the Infectious Disease Register, sends a copy of the certificate to the Public Vaccinator, to the Vaccination Officer, to the Metropolitan Asylums Board, to the Local Government Board, and, to protect Poor Law Institutions, to the Relieving Officer and the Medical Officer of the Workhouse. Upon the return of the Inspector's report the schools attended, varying from one to half a dozen, are extracted and entered in the register, and a copy of the notification certificate sent to the head teacher of each school. The notes of the Medical Officer of Health, and the Inspector's report, are then dissected, and letters sent direct to the Medical Officer of Health of the Metropolitan Borough Councils, Suburban Sanitary Authorities, or provincial towns as to the workplace and laundry of the patient, as to contacts of various kinds, and as to migrants and immigrants, and of the London County Council as to common lodging-houses and dairies.

From the Metropolitan Asylums Board the Medical Officers of Health receive a weekly list of all infectious cases notified in the Metropolis, including small-pox, and a weekly list of memoranda of all cases of small-pox admitted to the hospital. The memoranda in reference to small-pox are out of date at the end of ten days, when they are received. The Medical Officers of the Metropolitan Asylums Board send direct and daily to Medical Officers of Health notifications of all patients returned home not small-pox, and also of all visitors to hospital, stating whether these were re-vaccinated or not. Why cannot, in a similar manner, the memoranda of information obtained from patients by the Medical Officers at the wharf and hospital be sent direct and daily to the Medical Officers of Health, to whom they would then be of immediate use? The Medical Officers of Health of the Metropolitan

Boroughs should ask the Metropolitan Asylums Board to allow the memoranda to be sent directly and daily from the Medical Superintendents at the Small-pox Hospital and wharf direct to the respective Medical Officers of Health.

The sixth point is that Medical Officers of Health and Medical Superintendents of Small-pox Hospitals should be in direct and continual communication with each other, and furnish each other immediately with any information necessary for the protection of the public.

Contacts.

In making inquiry into a case of small-pox we ascertain (1) the patient's laundry, occupation, and school, workplace, or office attended; (2) the name, occupation, and school, workplace, or office attended by every person in the house; and (3) the names and addresses of visitors to and from the family or household.

These questions are most important in regard to the infected family. In a block of flats of entirely separated dwellings they are extended to the dwellings on the same floor, in ordinary houses sublet in separate dwellings to the whole house, and in houses used in common by all the inmates the inquiry must be as thorough and exact as possible.

In the case of the schools attended from an infected house, notifications are sent direct to the head teachers whether the schools be within or without the borough. In the case of laundries used, workplaces or office attended, or addresses of visitors and other contacts, if without the borough, the Medical Officers of Health where they are situated are notified direct.

Seventhly, I would ask you to consider the powers and duties of Medical Officers of Health with regard to the exclusion and seclusion of persons in contact with smallpox.

As this raises a number of difficult points I shall put them in the form of consecutive questions :—

(*a*) Is it advisable for a Medical Officer of Health to notify a laundry of small-pox in the family of a customer ?

(*b*) Is it advisable for a Medical Officer of Health to notify an employer that a person in contact with an employee is suffering from small-pox ? Is he justified in advising exclusion, and is there any liability for loss of wage upon the employer or the Authority ?

(*c*) Is it advisable that the employer should be liable, or the Authority have power to pay compensation to a person excluded from employment to protect a business ?

(*d*) Is a person excluded from school or employment to be allowed to associate everywhere else with other persons ?

(*e*) Is it advisable that Authorities should have power to provide and maintain seclusion or quarantine stations, power to seclude contacts within infected houses or stations, power to enforce cleansing and disinfection of the person and clothing of contacts, and power to pay compensation ?

(*f*) How can old clothes shops, pawnbrokers, and rag and bone shops or marine stores be best protected ?

(*g*) How far would compulsory vaccination, and *re-vaccination* as an alternative, affect these questions ?

The questions raised in this paper, I venture to say, are not only serious to us as executive officers, but are also questions of vital administrative importance for the discussion of Local Authorities.

APPENDIX.

The Spotted Maps.

The series of spotted maps hereto attached show week by week during sixteen weeks the progress and distribution of small-pox in London from the end of July to the middle of November 1901. They picture graphically the chain of events—the large local outburst caused by an unrecognised case followed by smaller groups from secondary foci, followed again by single cases more widely distributed still, the cyclical periods being well marked.

The map areas are those of the old Vestries and District Boards; the principal changes introduced by the London Government Act are shown by thick lines round the more central Boroughs, but the divisions are not material to the demonstration of the kaleidoscopic cycles.

PUBLIC HEALTH AND HOUSING: The Influence of the Dwelling upon Health in Relation to the Changing Style of Habitation. By JOHN F. J. SYKES, M.D., D.Sc. (Public Health), Edin.; Medical Officer of Health, St Pancras, etc. etc. Crown 8vo, cloth, 224 pp.; numerous Diagrams and Statistical Tables. 5s. net.

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THE COTTAGE HOMES OF ENGLAND. The Case against the Housing System in Rural Districts. By W. WALTER CROTCH. Second Edition. Revised and Enlarged. 8vo, cloth, 160 pp. 2s. net.

Pall Mall Gazette.—"Should any one wish to present a really useful book to a Parish or District Councillor, the one for him to choose is certainly 'The Cottage Homes of England,' for it deals with a subject in which all local authorities are, or ought to be, keenly interested just now; deals with it too in a plain, straightforward, practical fashion."

East Anglian Times.—"We hope that all who are interested in the problem of rural housing will read Mr Crotch's graphic narrative of facts. . . . We should like to see a copy of this book sent to the Chairman of every Parish Council in the kingdom."

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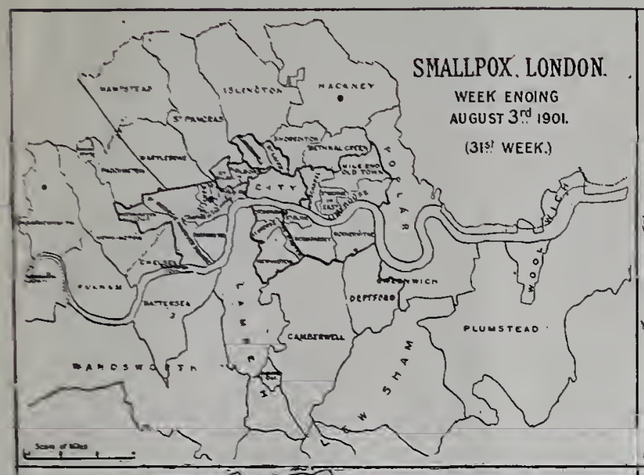
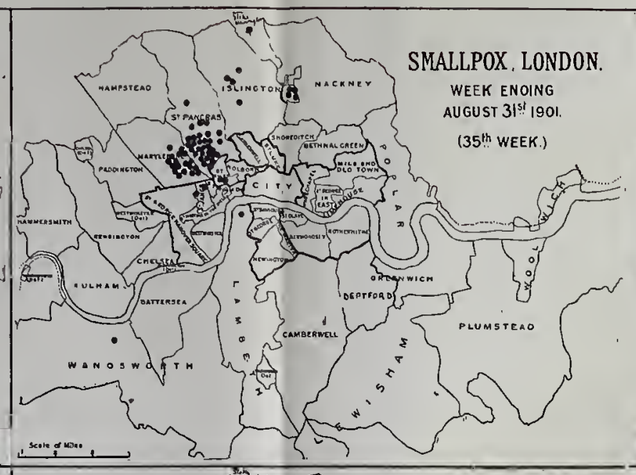
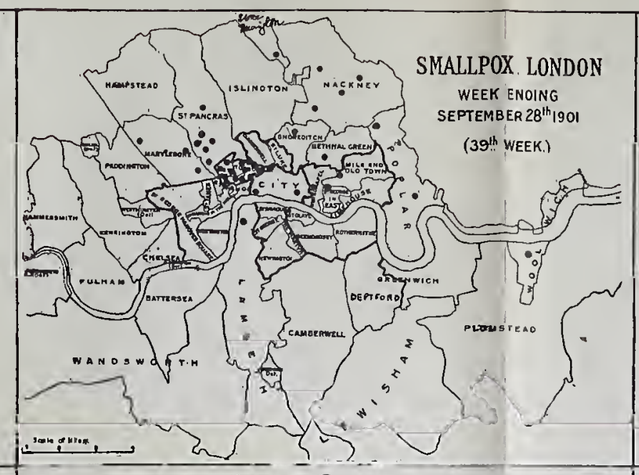
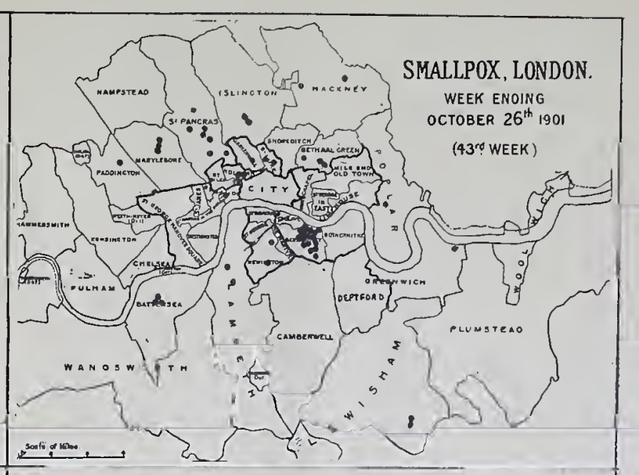
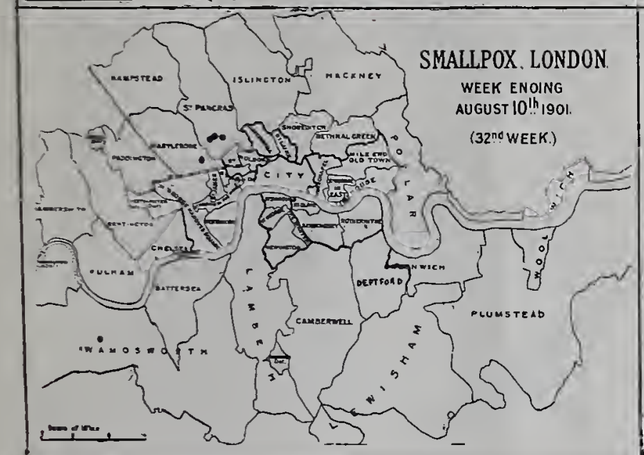
City Press.—"On the subject of London Government there is no greater authority than Mr J. Renwick Seager."

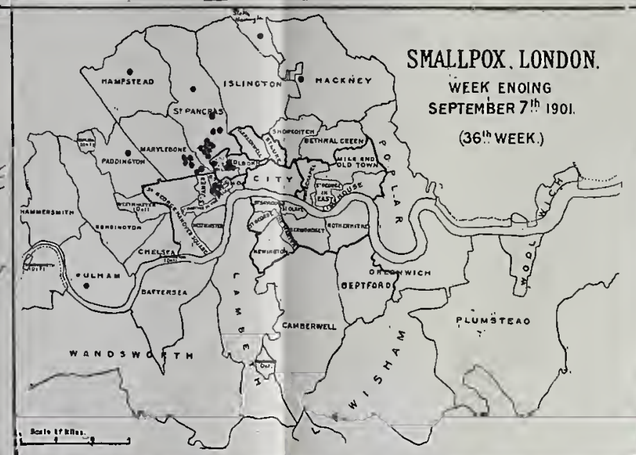

SMALLPOX. LONDON.
WEEK ENOING
AUGUST 3rd 1901.
(31st WEEK.)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH

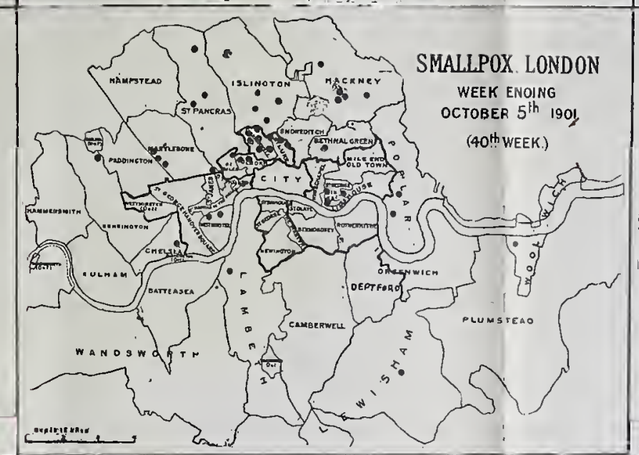

SMALLPOX. LONDON.
WEEK ENOING
AUGUST 31st 1901.
(35th WEEK.)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH

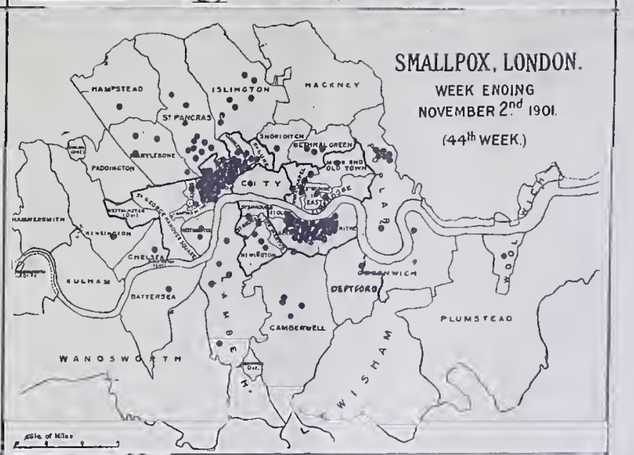

SMALLPOX. LONDON
WEEK ENOING
SEPTEMBER 28th 1901
(39th WEEK.)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH

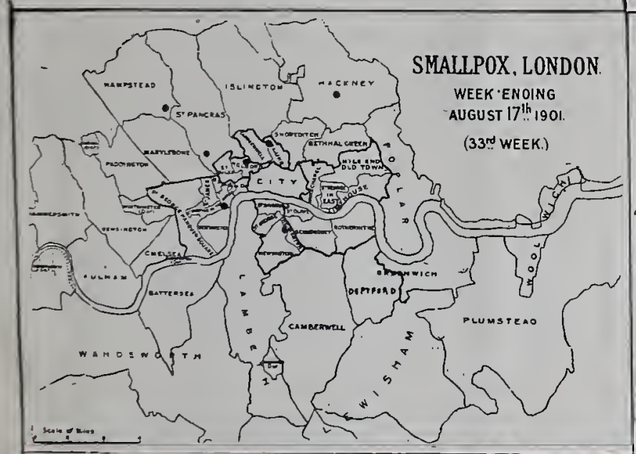

SMALLPOX, LONDON.
WEEK ENOING
OCTOBER 26th 1901
(43rd WEEK)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH

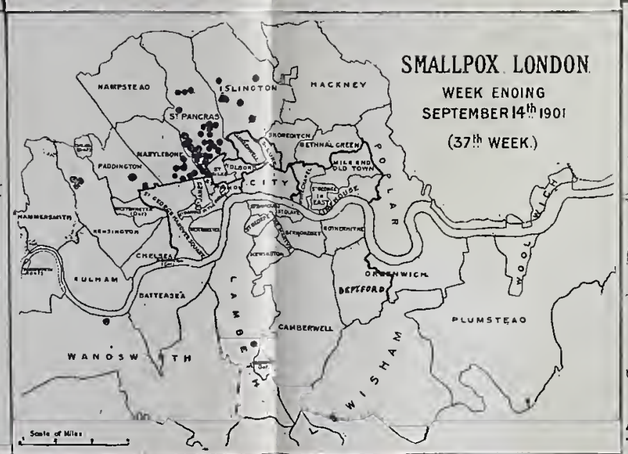

SMALLPOX. LONDON.
WEEK ENOING
AUGUST 10th 1901.
(32nd WEEK.)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH

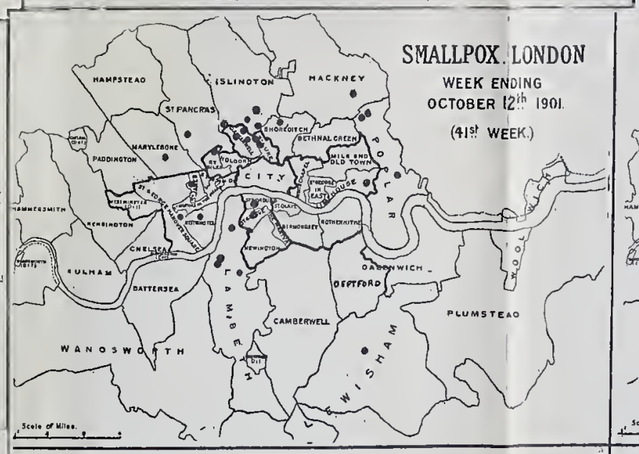

SMALLPOX. LONDON.
WEEK ENOING
SEPTEMBER 7th 1901.
(36th WEEK.)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH

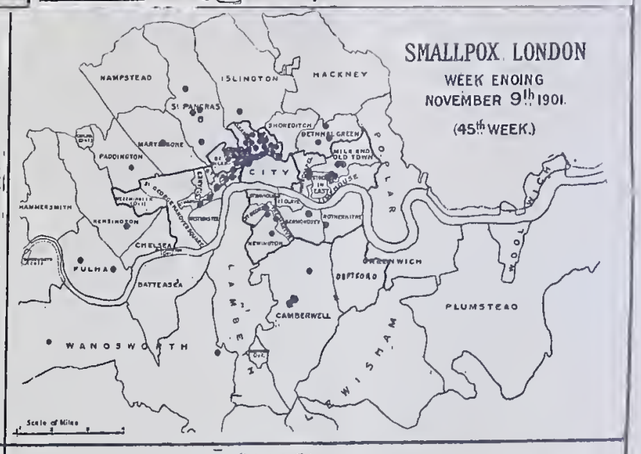

SMALLPOX. LONDON
WEEK ENOING
OCTOBER 5th 1901
(40th WEEK.)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH

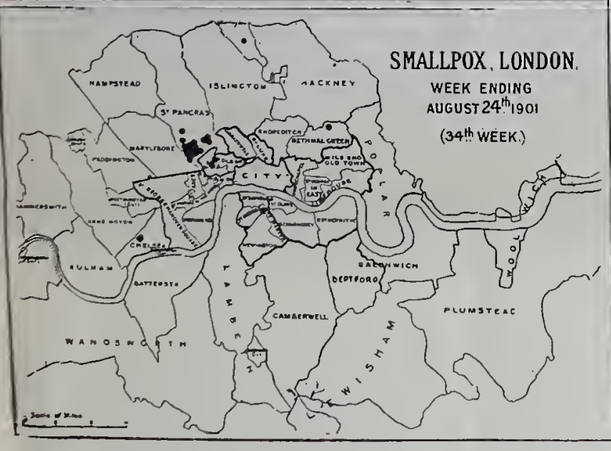

SMALLPOX, LONDON.
WEEK ENOING
NOVEMBER 2nd 1901.
(44th WEEK.)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH

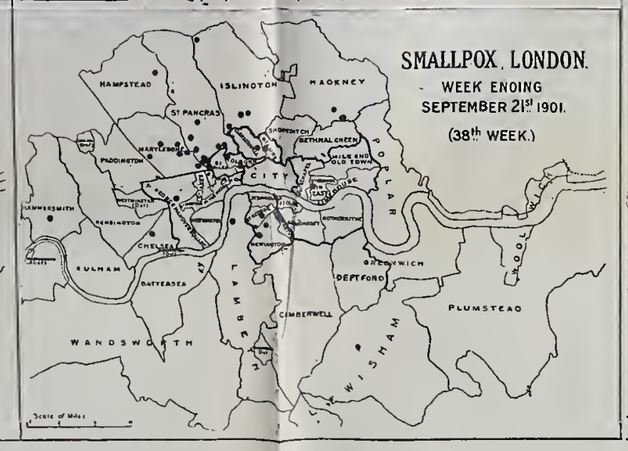

SMALLPOX. LONDON.
WEEK ENOING
AUGUST 17th 1901.
(33rd WEEK.)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH

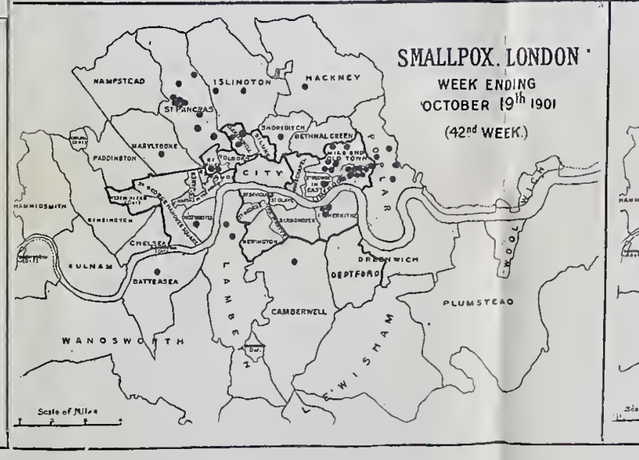

SMALLPOX. LONDON.
WEEK ENOING
SEPTEMBER 14th 1901
(37th WEEK.)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH

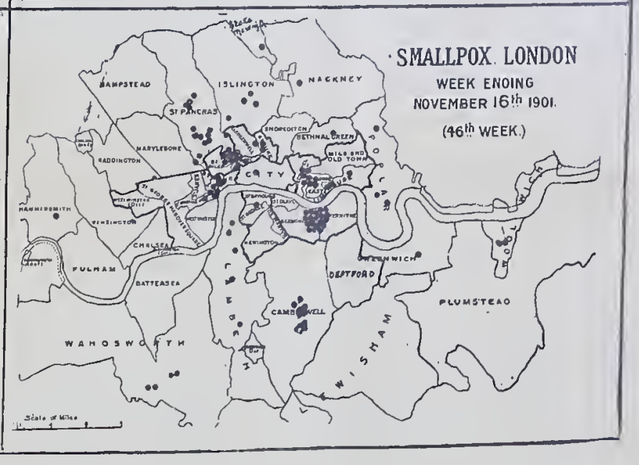

SMALLPOX. LONDON
WEEK ENDING
OCTOBER 12th 1901.
(41st WEEK.)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH


SMALLPOX. LONDON
WEEK ENOING
NOVEMBER 9th 1901.
(45th WEEK.)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH


SMALLPOX. LONDON.
WEEK ENDING
AUGUST 24th 1901
(34th WEEK.)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH


SMALLPOX. LONDON.
WEEK ENOING
SEPTEMBER 21st 1901.
(38th WEEK.)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH


SMALLPOX. LONDON
WEEK ENDING
OCTOBER 19th 1901
(42nd WEEK.)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH


SMALLPOX. LONDON
WEEK ENOING
NOVEMBER 16th 1901.
(46th WEEK.)
HAMPSTEAD
ISLINGTON
HACKNEY
ST PANCRAS
MARYLEBONE
PADDINGTON
SHOREDITCH
BETHNAL GREEN
MILE END OLD TOWN
CITY
HAMMERSMITH
KENSINGTON
CHELSEA
FULHAM
BATTERSEA
GREENWICH
DEPTFORD
CAMBERWELL
PLUMSTEAD
WANDSWORTH
LAMBETH
WISHAM
POPLAR
WOOLWICH